



*Archeological Investigation of the Boulders at  
Canyon Creek Development Project Area,  
San Antonio, Bexar County, Texas*

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Herbert G. Uecker, Principal Investigator

Prepared for Drash Consulting Engineers, Inc.

February, 2005



South Texas Archeological Research Services, LLC  
Report of Investigations No. 11

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### Abstract

In mid February, 2005, South Texas Archeological Research Services, LLC, performed an archeological investigation of the Boulders at Canyon Creek Development project area in San Antonio, Bexar County, Texas, for Drash Consulting Engineers, Inc. The project area contained approximately 26 acres and the investigation was required by applicable provisions of the City of San Antonio Unified Development Code and the regulations of the City Planning Department, Historic Preservation Office. Per requirements of the Historic Preservation Office, the investigation was conducted according to the *Archeological Survey Standards for Texas* of the Texas Historical Commission.

Five archeological shovel tests were excavated within the project area and surface exposures within the area were visually examined. The investigation revealed that the project area contained relatively shallow natural clay or clay loam soils above limestone bedrock or bedrock-derived gravels that supported a dense stand of natural vegetation, including primarily live oak and juniper trees, and assorted understory shrubs, vines, and grasses. A thick mat of leaf litter and other organic mulches covered the majority of the surface. The investigation encountered no standing structures or structural ruins, nor any archeological sites or other cultural resources.

Based on these results, South Texas Archeological Research Services, LLC, recommended to Drash Consulting Engineers, Inc., and the San Antonio Historic Preservation Office that the currently planned construction should be allowed to proceed without further archeological work, subject to the stipulation that if any cultural resources should be encountered within the project area during construction, per applicable city codes and regulations, construction work should immediately be halted in the vicinity until such finds are examined and evaluated by a qualified archeological consultant and/or the San Antonio Historic Preservation Office.



### Acknowledgements

South Texas Archeological Research Services, LLC, was assisted in coordinating and performing the survey of the project area by two persons whose help is gratefully acknowledged: Drash Consulting Engineers, Inc.'s Environmental Division Project Manager Tomas Hernandez, Jr., P. E., and City of San Antonio Historic Preservation Office archeologist V. Kay Hindes.



## Introduction

On February 11, 13, and 14, South Texas Archeological Research Services (STARS), LLC, performed the fieldwork phase of an archeological investigation of the Boulders at Canyon Creek Development project area for Drash Consulting Engineers, Inc. The project area contained approximately 26 acres located near the confluence of Mustang and Mud Creeks within the rolling limestone hills at the southern fringe of the Balcones Escarpment and Canyonlands in far northern San Antonio, Bexar County, Texas (Figure 1). The archeological investigation was required by Division 3, Sections 35-634 through 35-640 of the City of San Antonio Unified Development Code and the regulations of the City Planning Department, Historic Preservation Office (HPO). Per HPO regulations, the investigation was conducted according to the *Archeological Survey Standards for Texas, Minimum Survey Standards* of the Texas Historical Commission.

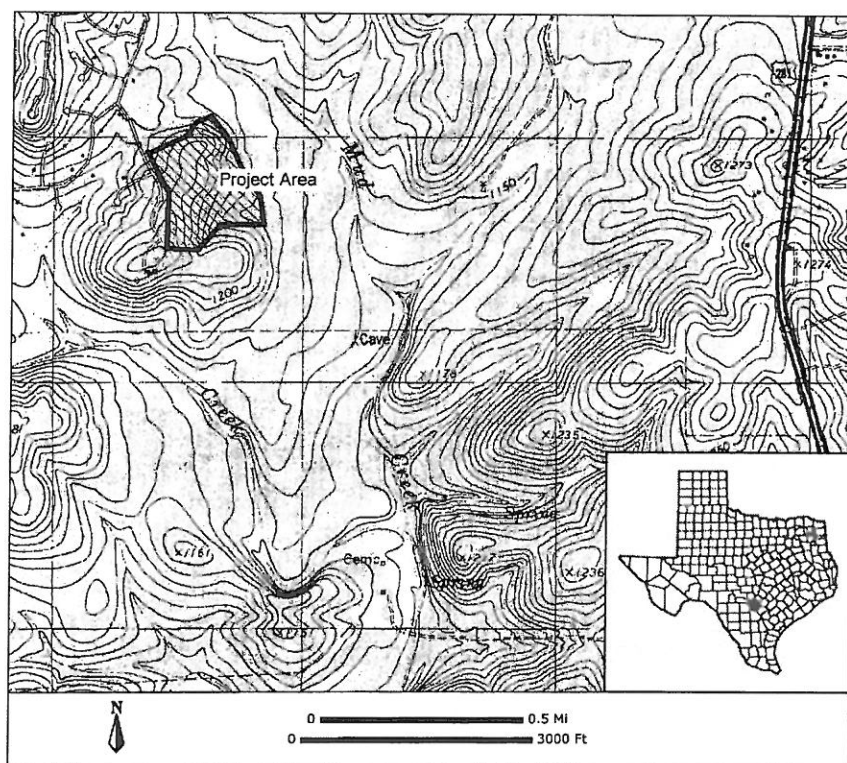


Figure 1. Section of Bulverde, Texas, USGS Topographic Quadrangle Map with location of project area and inset of location of Bexar County.

Surface exposures within the area were visually examined and five archeological shovel tests were excavated within the project area. This work revealed that the project area contained relatively shallow natural clay or clay loam soils above limestone bedrock or bedrock-derived gravels that supported a dense stand of vegetation, including primarily live oak and juniper trees, and assorted understory shrubs, vines, and grasses. An aerial photograph of the project area taken in about the mid 1960s by the United States Department of Agriculture, Soil Conservation Service, indicates that the area apparently was not under cultivation and that vegetation was then similar to that present at the time of the STARS investigation (front cover; Taylor et al. 1966:Sheet 10).

The area of potential effects for the project was the zone of impacts for construction of a new residential subdivision within

the project area. For purposes of conducting the STARS archeological investigation, it was assumed that the entire project area would be impacted by the project. At the time of the survey, with the exception of exposed surfaces within several ranch roads and within portions of the channel of a shallow, narrow, natural drainage near the southern border, virtually the entire surface of the project area was obscured by grasses, weeds, and organic litter that effectively reduced surface visibility to almost zero. Neither the drainage margins nor other portions of the project area contained enough soil depth to warrant backhoe trench testing. The drainage margins contained a relatively shallow accumulation of colluvial and alluvial soil in a few areas. Soils within the remainder of the project area were very shallow and stony, and obviously developed in place above limestone bedrock substantially as a result of the action of plant roots and the accumulation of relatively acidic mulch on the calcareous bedrock (Figures 2-4). Thus, shovel testing away from drainage margins was not warranted.



Figure 2. Typical machine-cut profile and native vegetation along Quiet Rapids Street at northern edge of project area.

Instead, a pedestrian survey of the project area was executed and five shovel tests were excavated within the thin soil benches along the drainage. All exposed surfaces encountered during these procedures, and profiles recently cut along adjoining city streets, were carefully scrutinized.

The fieldwork phase of the survey was conducted by STARS owner and Principal Investigator Herbert G. Uecker. The Principal Investigator also prepared this report, which conforms to the *Council of Texas Archeologists Guidelines for Cultural Resource Management Reports*.

#### General Background

##### *Regional Natural Setting and Natural History*

At the time of the survey, the regional physiographic and geologic setting of the project area had already been described in considerable detail (cf. Abbott and Woodruff 1986; Black 1989a:5-16; Black and McGraw 1985:40-54; Mahula 1976:2-6). Briefly, the project area is located near the southern edge of the Balcones Escarpment and Fault Zone at an average elevation of about 365 meters above sea level. The fault and escarpment



Figure 3. Sweeping view of machine-cut profile along Canyon Golf Road at eastern border of project area.

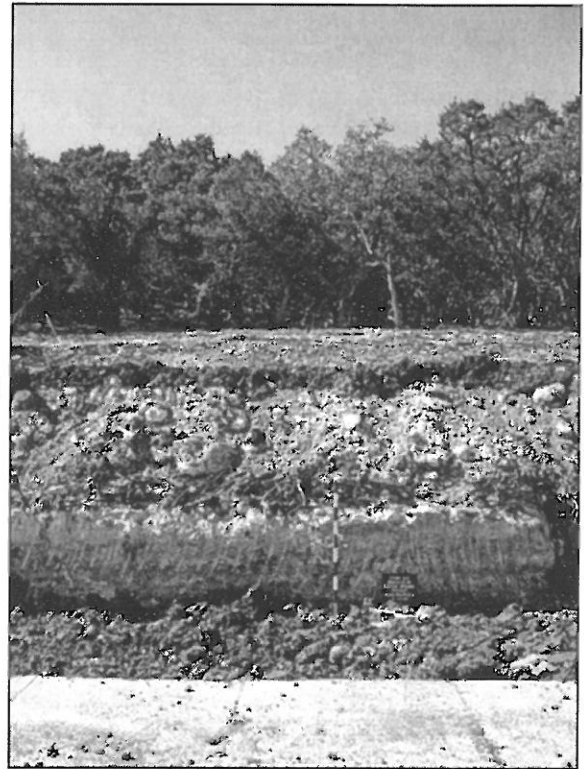


Figure 4. Detailed view of typical soil profile and native vegetation along Canyon Golf Road at eastern border of project area.



region is also known as the Balcones Canyonlands. Intermittent faulting began in the area during the Miocene geologic epoch about 15-21 million years ago and continued until about a million years ago.

The regional geomorphology consists of a series of northeast to southwest trending fault scarps and associated erosional features. The regional drainage pattern is dendritic and major drainages in the area include the Guadalupe River and Cibolo Creek to the north of the project area, and the Medina and San Antonio Rivers, which are west and south of the project area. Many secondary streams, such as Mud and Mustang Creeks, also dissect the general area.

Base or parent rocks in the canyonlands zone include several members of the Lower Cretaceous series including the Del Rio shale formation and the Buda, Edwards, and Glenrose limestones. These formations collectively range up to as much as 10,000 meters thick over much of central and south Texas. They were formed during the Cretaceous geologic period between about 120 and 65 million years ago.

During the last several million years, numerous karst features have formed within the limestone formations, which also house the Edwards aquifer (cf. Veni 1988:11-26; 1998). The aquifer is a regional-scale phenomenon composed of porous beds of limestone and shale sandwiched between less permeable calcareous strata and it is virtually the sole source of potable water for much of central Texas. Soils in the canyonlands region are derivatives of the local bedrock and are typically very thin, stony, and underdeveloped in the uplands.

Ecologically, the area has been a resource-refugium zone since the middle of the Holocene geologic epoch about 7,000 years before present (B.P. [present being arbitrarily defined by culture historians as A.D. 1950]). It was at that juncture in time that the onset of the Altithermal climatic episode (Nance 1972) began to substantially alter the climate of the North American southwest, including Texas. The Altithermal was a period of relatively intense heating and drying that lasted, with many short breaks, until the present time. As the lush tall-grass steppes and mixed-grass prairies of south and west Texas were reduced to thorn scrublands and semiarid deserts over several millennia, both animal and human populations congregated in such areas as the Rio Grande basin and the mountain forests of west Texas and northern Mexico, and also in the central Texas Hill Country. South and west of the Hill Country, riparian zones slowly evolved into isolated ribbons of resources, and many unique places along the area's rivers and streams became centers of human population.

The project area is situated within a broad ecotonal zone that exhibits characteristics of three major natural regions (cf. Blair 1950; Riskind and Diamond 1988): (1) the Balconian Biotic Province, a subtropical, subhumid mixed woodland or parkland that is geographically congruent with much of the Texas Hill Country and is dominated by juniper-oak scrub forests; (2) the Tamaulipan Biotic Province, a subtropical to megathermal desert steppe or thorn scrubland that ranges southward from central Texas into the coastal and Rio Grande plains and well into northern Mexico that is dominated by huisache and mesquite; and (3) the Blackland Prairie, a subtropical, subhumid area characterized by mixed savannah grassland or prairie and by post oak-blackjack oak woodlands that ranges northward and eastward to the Red River area near the Texas-Oklahoma border. The climate of these regions during the last several millennia has been typified by short mild winters and long hot summers. Modern annual precipitation in the area averages about 700-800 mm and follows a bimodal pattern with maxima in May and September. The Balcones tablelands have sometimes been the locus of world record precipitation events triggered by tropical waves of warm moist air from the Gulf of Mexico colliding with colder dryer air of arctic and subarctic origins surging southward from the high plains (Caran and Baker 1986).

In the mid 2000s, there were hundreds or even thousands of species of plants, animals, and insects thriving in central Texas. It is beyond the scope of this report to include a comprehensive listing or description of these species but the interested reader is referred to publications by Davis (1960), Enquist (1987), Everitt and Drawe (1993), Kutac and Caran (1994), Neck (1986), Riskind and Diamond (1986), Simpson (1988), and Vines (1984). Major terrestrial faunal species and avifaunal species of the area include the white-tailed deer, javalina, coyote, red





fox, opossum, raccoon, ringtailed cat, squirrel, striped skunk, armadillo, wild turkey, bobwhite quail, Inca dove, white-winged dove, box tortoise, and western diamondback rattlesnake. Prominent raptors of the region include turkey and black vultures and various species of owls; and red-tailed hawks, eagles, and peregrine falcons. Also, modest numbers of cougar and bobcat are present in the less populated areas. One black rock squirrel and several white-tailed deer (see cover photo) were seen during the STARS investigation of the project area.

Prominent plant species and communities of the project area and immediate vicinity are typical of those found throughout much of central Texas. Live oak, mountain laurel, persimmon, and juniper are major tree varieties of the hill country scrub forests. Tree species such as mesquite, huisache, and blackbrush acacia; and many cacti and yuccas including prickly pear, Spanish dagger, and sotol are prevalent in lowland thorn shrub thickets. Stream courses and river bottoms of the region contain a broad spectrum of native deciduous trees including Spanish oak, cedar elm, hackberry, pecan, walnut, cherry, and ash. Whitebrush, giant ragweed, cockle burrs, snow-on-the-prairie, frost plant, and numerous other herbs and forbs cover the forest floors. Dozens of types of short and mid grasses carpet the region's prairies and savannas.

### *Regional Culture History and Cultural Ecology*

Probably attracted by the abundance of pristine water, the steep ecological gradients, and the rich biotic microenvironments present, humans first occupied the central Texas area at least 11,000 years B.P. The local culture history contains four broad divisions (cf. Black 1989b:25-33, 1989c:48-57; Black and McGraw 1985:35-40; Hester 1980:27-37; Turner and Hester 1999:50-63): the Paleoindian period (ca. 11,000-8000 B.P.), the Archaic period (ca. 8000-1500 B.P.), the Late Prehistoric period (ca. 1500 B. P. to A.D. 1528), and the Historic period (ca. A.D. 1528 to present). During all but the Historic period, humans in the area were engaged in a nomadic to semi-sedentary hunting and foraging lifeway. Archeological evidence indicates that they were organized as small groups or bands that traveled much of the time in regular patterns, known as subsistence forays, in order to exploit a variety of seasonably available natural resources. This lifeway was practiced in most of North America for many thousands of years before the fifteenth century infusion of Europeans to the New World.

Such peoples were largely of Asiatic origin, but are variously referred to as aboriginals, native Americans, American Indians, ancient Americans, or early Americans. Apparently many of these pioneers entered North America from eastern Siberia via the Bering Strait sometime prior to about 15,000 B.P., probably during a major episode of global cooling and glaciation when an ice sheet or bridge connected Siberia to Alaska. They eventually spread throughout the Americas, and their cultures flourished and greatly diversified, especially during the last few thousand years. By the early eighteenth century when the Spanish established missions in Texas, several hundred Indian groups, each having a fairly distinct linguistic or socio-political identity, lived in the southwestern United States, Texas, and northern Mexico (cf. Campbell 1979:1, 1988:39; Schuetz 1976:1). The story of these peoples' prehistoric past encompasses the first three major periods in the culture history of the central Texas area.

The Paleoindian period includes the terminus of the Pleistocene geologic epoch and the beginning of the Holocene. The climate of the period was generally somewhat cooler and more humid than that of later periods. The natural landscape in much of central Texas during this period consisted mostly of forest parkland, i.e., savannah grasslands with numerous clusters of trees. The lush vegetation of the period provided a trophic base which supported many large ice-age herbivores and carnivores. Sea level along the Texas coast is estimated to have been about 120 m lower than at present; thus, a broad seaward expanse of land, which is now inundated, existed during those times. Paleoindians were typically organized as small, nomadic, stone-age, hunting and foraging bands that often pursued such large game as bison, mammoth, and mastodon. The fact that they supplemented their diets with wild plant foods has been documented only occasionally in much of Texas because of the poor preservation of pollen and plant fibers in most local soils. The relatively few Paleoindian sites documented in Texas consist primarily of isolated finds of chipped stone spear points that exhibit highly distinctive styles and workmanship, and rare kill and butchering sites of Pleistocene game animals.



The Archaic period is characterized by a shift to generally dryer and warmer conditions, sometimes referred to as the Altithermal climatic period (Nance 1972). The Altithermal of Texas apparently was punctuated by alternating mesic and xeric episodes that were sometimes of significant duration and magnitude. In spite of these erratic patterns, the landscape gradually evolved into a mosaic of alternately sparse and lush savannah grasslands with isolated stands of trees on the uplands and heavier arboreal growth in the riparian zones. This drying out of the land after the Pleistocene corresponds to broad changes in the lifeways and cultures of native peoples. The archeological record indicates that a substantial degree of diversification in human subsistence patterns occurred. Emphasis shifted from the hunting of large Pleistocene mammals, by then extinct, to a new focus on the hunting of smaller game and on plant food gathering, processing, and consumption. During most of the period the dominant lifeway continued to be nomadic hunting and foraging by small egalitarian bands who exploited scattered seasonal resources. As evinced principally by the appearance in the archeological record of large communal or clan cemeteries toward the end of the period, population growth resulted in land and other resource scarcities, prehistoric peoples began to form into large groups, and territorialism, sociopolitical complexity, and semipermanent or permanent settlements fromed.

The predominant type of central and south Texas archeological site of the period is the occupational refuse pile, or midden. Such midden sites are frequently large, open, seasonally occupied base camps located along rivers and streams. They were central places used for the accumulation, processing, cooking, and consumption of foods, and presumably for habitation as well. They were also occasionally used for burying the dead (Hester 1985). Burned rock middens are the most common type present at interior sites. At such sites, foods were often cooked in earthen pits lined with rock slabs or boiled in hide pouches filled with water, food, and hot stones. The rocks had to be routinely replaced as they disintegrated from continual exposure to the intense heat. This resulted in the gradual accumulation of large heaps of thermally fractured and discolored rocks mixed with food scraps, discarded tools, and tool manufacturing debris. Diagnostic projectile points, radiocarbon dates, and other archeological data from burned-rock-midden sites indicate that many of them were occupied intermittently for several hundreds or even thousands of years by peoples who normally wandered about in small bands, but who gathered into much larger bands for special seasonal activities and ceremonies. Additional information about burned-rock-midden sites is provided in the section on interpretation of research findings of this report.

Other types of sites that are associated with the Archaic period include smaller, shorter-term occupancy or use sites such as upland hunting-butcherer camps, quarry-workshop sites for the procurement of raw stone for the manufacturing of chipped stone tools, cavern or rockshelter habitation sites, isolated hearths and stone chipping scatters, burial and cemetery sites, and isolated finds or caches of projectile points or other tools.

During the Late Prehistoric period, plant domestication and other agricultural practices were gradually adopted. Due to the poor preservation of plant remains in prehistoric archeological deposits of central and south Texas, the extent to which these new subsistence activities were used is not known. The bow and arrow and ceramic technology were introduced from neighboring regions. Permanent settlements arose and trade networks for the routine exchange of goods with neighboring regions were greatly expanded. Sociopolitical relationships were elaborated and the concepts of local group identity and coherence were undoubtedly strengthened.

The impact of these changes on the lifeways of the native peoples living in central and south Texas during the period is just beginning to be known. Apparently with few exceptions, the Archaic lifeways practiced in south and south-central Texas continued largely unmodified into the Late Prehistoric period. The modifications in the technological and cultural inventory that occurred there during the Late Prehistoric period and that manifest archeologically include the production and widespread distribution of smaller, lighter stone tips for arrows and the routine production and use of ceramics. The subsurface remains of prehistoric houses or village sites, and the attendant traces of nearby activity areas, fortification features, agricultural plots, and irrigation systems from the period are present in Texas, but are confined mostly to the northern, eastern, and western margins of the state. Ethnographic accounts from European explorers who ventured into the south Texas or Texas coastal areas during



the sixteenth and seventeenth centuries also mention the existence of villages of crude structures, but at this writing there was virtually no known archeological evidence for the existence of such structures (cf. Johnson 1997).

Many of the indigenous Texas Indian groups, including such long term residents of the central Texas region as the Coahuiltecan and Tonkawas, continued to engage primarily in nomadic hunting and foraging well into historic times. This was the case in spite of the fact that some of their Late Prehistoric ancestors had begun the routine practice of horticulture or agriculture, and had apparently settled in permanent or nearly permanent villages by about A.D. 500. Archeological evidence has recently emerged that indicates that small permanent or semi-permanent villages were probably present in what is now central Texas as early as the Middle Archaic period (Johnson 1997). Shortly after the accidental introduction of horses into American Indian culture in the sixteenth century by the Spanish, bison-hunting became the way of life for many tribes on the Great Plains, where nomadism also continued. The Apaches and Comanches are the main southern plains tribes that invaded the central Texas area from the west and north during the 1600s and 1700s, displacing, absorbing, or exterminating many of the original inhabitants of the area (cf. Hester 1980; Newcomb 1961; Sjoborg 1953). They also frequently raided European-American settlements in or near the Texas Hill Country. During the eighteenth century, most of the surviving indigenous groups apparently fled to outlying regions or sought protection from invaders in the Spanish missions.

The Historic period in Texas began in the early sixteenth century (ca. 1528-1536). The first Spaniard, if not the first European, to set foot on Texas soil was probably Alvar Núñez Cabeza de Vaca. He was sailing the Caribbean with an exploratory Spanish expedition and was shipwrecked off the Florida coast in 1528. For about the next eight years, he allegedly wandered along the gulf coast, well into Texas, and finally arrived in Mexico in 1536. By that time, the Spanish had conquered and dominated many of the aboriginal cultures that occupied Mexico, Central America, and a sizeable portion of South America, and thus established a foothold of European-style civilization in those areas. During the period from roughly the second decade of the sixteenth century to the terminal seventeenth century, the Spanish colonized all of what is now Mexico to the Rio Grande. In 1691, an expedition of Spaniards from Mexico penetrated Texas to San Pedro Springs, now located in the northern portion of San Antonio's central business district. In an often-quoted report to the viceroy, explorer Domingo Terán de los Ríos related:

We marched five leagues over a fine country with broad plains---the most beautiful in New Spain. We camped on the banks of an arroyo, adorned by a great number of trees, cedars, willows, cypresses, osiers, oaks and many other kinds. This I called San Antonio de Padua, because we reached it on his day [Terán de los Ríos 1691 as quoted in Crook 1967:1-2].

Fray Damian Massanet, also with the 1691 Spanish expedition, is cited by Crook as attesting that they encountered a very large tribe of Payaya Indians at that same location.

Several more preliminary expeditions into Texas were conducted by the Spanish during the next few decades. The landing of the Frenchman René Robert Cavelier, Sieur de La Salle, on Matagorda Island in 1684 and the subsequent activities of the French in Texas appear to have consolidated the resolve of the Spanish to colonize the region north of the Rio Grande. Some Spanish families had permanently settled in the vicinity of San Antonio by 1715 (Chabot 1936:8), and by 1718 the Spanish officially established the first settlement north of the Rio Grande near San Pedro Park. Called San Antonio de Padua, it consisted of a mission and a presidio based on agriculture employing Indian labor and irrigation. This subsistence base was used by the Spanish for virtually the entire time that they controlled the area.

The Spanish soon expanded their colony southward along San Pedro Creek and the San Antonio River, and by 1726, citizens of the crown numbered about 200 in the San Antonio area. In 1731, a party of about 52 additional settlers arrived from the Canary Islands and joined the fledgling colony. The Bexar County missions south of the present Alamo were imported during the mid eighteenth century from what were originally satellite locations in east Texas, and the relocation constituted a final impetus for Spanish settlement in the vicinity.



The missions continued active throughout much of the remainder of the eighteenth century. With the beginning of secularization of the missions in the early 1790s came the granting of what had previously been the mission-controlled lands in Texas to Spanish citizens. By the end of the mission era, the indigenous Indians who were, presumably, descendants of the first human inhabitants of south and central Texas, had been virtually eradicated. Many of those who took refuge in the missions died of European-introduced diseases, and the hunting-gathering lifeways of the remnant populations radically disrupted by mission life and the trials of acculturation.

For many decades after the missions waned, the culture history of much of Texas continued to be dominated by their influences. Throughout the periods of Mexican and Texan independence, the U. S.-Mexican War, and until just prior to the Civil War, the subsistence base of the region was largely agricultural and local population growth was fairly benign. There were very few changes in land usage in the area throughout the reigns of several major imperial powers over almost a century and a half until the railroad and the Industrial Revolution came to the region (Fehrenbach 1978:114-117).

Due principally to the infusion of German culture into Texas, substantial changes in local land usage began to occur during the second quarter of the nineteenth century, and their affects lasted through virtually the remainder of the century. It is clear from the history of immigration in Texas that there were simultaneous appearances of significant numbers of several other ethnic groups, mostly of northern European origins, but German immigrants were remarkably talented and unusually tenacious settlers, organizers, builders, and commercializers in the Central Texas area. The Germans came early, quickly planted deep roots, and spurred much later development.

As early as the 1830s, a few Germans had already migrated to Texas (Lich 1986:6). Substantial German colonization in Texas began in about 1845 with Prince Carl of Solms-Braunfel's founding of New Braunfels (Biesele 1930:119). During the next decade, the German settlements of Fredericksburg and Boerne developed in the Hill Country north of San Antonio. Contemporaneously, the Germanic population of San Antonio was on the increase and by 1876, according to the town assessor, totaled 5,630 Germans and Alsatians (Fehrenbach 1978:117).

The Germans settled principally along the Balcones Escarpment in central Texas. The German-American settlement nearest the project area is Bulverde, which today is just north of the area in southwest Comal County. Bulverde initially developed during the mid nineteenth century. Although it was named after an early settler of Italian heritage, Luciano Bulverde, it quickly attracted several German-American families who eventually occupied lands extending eastward nearly to the town of New Braunfels from present-day Leon Springs Military Reservation and along U. S. Highway 281 North from about Overlook Parkway northward to Highway 46.

The Balcones Escarpment is the most prominent landform in the Central Texas region and has served as a transitional zone between broadly different lifeways throughout most of the Historic period: "Since earliest European settlement, the Balcones Escarpment stood as a cultural frontier, a dividing line between the farming economy of the coastal plain and the ranching economy of the Texas Hill Country. The Escarpment has greatly influenced the cultural development in the land which it transects [Palmer 1986:153]." Since about the beginning of the nineteenth century, and especially prior to the Civil War, the Escarpment has been the physical and cultural boundary between the Old South and the Old West. Before the coming of the Industrial Revolution to the area during the late-nineteenth century, the economy of the Old South was based primarily on the growing of cotton, while that of the Old West was based mainly on livestock production (Abbott and Woodruff 1986:Preface). Many German-American settlers were attracted to the escarpment region because of its general physiological similarities to certain portions of Germany, such as Bavaria.





## Soils and Geoarcheological Context

Elevations within the project area ranged from about 380 to 350 meters above mean sea level. Soils within the area are identified by Taylor et al. (1966) as members of the Brackett-Tarrant, Crawford, and Bexar soil groups. Such upland, limestone-leached, Texas Hill Country soils generally tend to be shallow, relatively underdeveloped, and naturally reworked or deflated. Secondary drainages are typically relatively short, narrow, and shallow. With the exception of the afore-described drainage segment, the remainder of the project area consisted of gently rolling limestone hills, slopes, and upland flats. Soils were generally shallow and bedrock was commonly exposed within the project area, in both natural settings and where the thin upland soils were artificially disturbed. Given these conditions, the project area was not likely to contain any deeply buried archeological resources.

When checked by STARS just prior to the survey, the Texas Archeological Sites Atlas of the THC contained no data regarding previous surveys or sites within or adjacent to the project area. However, the nearest previously recorded prehistoric site was just east of the project area along Mud Creek, and several other sites were recorded within the general area. Although apparently subsurface testing had not been done at any sites in the general vicinity of the project area at the time of the STARS survey, based on surface evidence, most of those sites were relatively small, shallow, and very loose aggregations of burned rocks, chipped stone tools, and debitage. In about the mid 1990s, at few sites of this type in generally the same part of northern Bexar County as the project area, and situated in similar upland settings, isolated finds of late Paleoindian projectile points, principally of the Angostura variety, were discovered during archeological surveys by Texas Historical Commission stewards (Texas Historical Commission 2005). Some of these finds were made within a few kilometers of the project area.

Regionally, in conjunction with topsoil mining, drainage channelization and surface-water-reservoir construction projects along segments of the Cibolo Creek, the Medina and San Antonio Rivers, and other major drainages, numerous prehistoric sites were found both at the surface and deeply buried in thick alluvial deposits. The deepest sites in the region are contained in the massive alluvial deposits of the Medina and San Antonio River drainages far to the south of the project area. Because they are so deeply buried, the oldest of those sites are archeologically obscure (cf. Potter 1995: 11). Research on some of these sites has revealed that they are generally well-preserved and contain archeological resources representing all periods of regional prehistory. For additional information about geoarcheology see Abbott (2001), Collins (1995, 1997), Holliday (1997), and Waters (1996).

## Methodology and Findings

Since much of the project area was heavily forested and the forest floors were almost entirely obscured by sedges and organic litter, conventional pedestrian examination of most of the area, such as that typically required by the HPO, was not practical or appropriate. Fortunately, past artificial activities, such as ranch road construction and maintenance, and recent city street construction along the northern and eastern boundaries of the project area had produced exposures of topsoils, and of gravel and bedrock surfaces or profiles, over a considerable portion of the area. A diligent effort was made to locate such exposures or profiles and all that were found were visually examined for the presence of cultural evidence.

Also, five archeological shovel tests were excavated within several low soil benches bordering the drainage along the southern edge of the project area (Figures 5-7; Table 1). Each shovel test was about 30 centimeters in diameter. Due to the shallowness of bedrock or large limestone cobbles throughout the area tested, depths of the tests ranged from about 35-50 centimeters. Because of the sticky consistency and moisture content of the clay soils encountered in the tests, screening of excavated matrix was not feasible, but representative samples of matrix from all tests were hand sorted. Above the limestone bedrock or cobble layers, shallow, dark gray-brown clay and clay loam topsoils over slightly lighter gray-brown clay subsoils were encountered within all of the tests. These soils were very uniform in consistency and appearance and contained virtually no visible natural inclusions. Boundaries between soil zones were gradual and no cultural evidence was encountered within shovel tests.





Figure 5. Approximate locations of archeological shovel tests (at tips of black arrows; R-L: 1-5) within project area. North is toward top of image and scale is 1" = approximately 300 feet. Base map courtesy of Sherfey Engineering Company, L.L.C., and Drash Consulting Engineers, Inc.

Table 1. Shovel Test Data

No	Depth	Munsell Values	Soil Type (ordered surface to bottom)	Results
1	35	10YR3/1-3/3	Dark gray brown clay loam/lighter gray-brown clay/LS bedrock	Negative
2	45	10YR3/1-3/3	Dark gray brown clay loam/lighter gray-brown clay/LS bedrock	Negative
3	40	10YR3/1-3/3	Dark gray brown clay loam/lighter gray-brown clay/LS bedrock	Negative
4	35	10YR3/1-3/3	Dark gray brown clay loam/lighter gray-brown clay/LS bedrock	Negative
5	50	10YR3/1-3/3	Dark gray brown clay loam/lighter gray-brown clay/LS bedrock	Negative

Notes: Large natural limestone cobbles or bedrock that was not penetrable by shovel testing was encountered at the bottoms of all tests. Except for the limestone cobbles, there were no visible inclusions within the clays and clay loams and boundaries between them were gradual. Numbers refer to plan of project area shown in Figure 5. Depths are in centimeters.

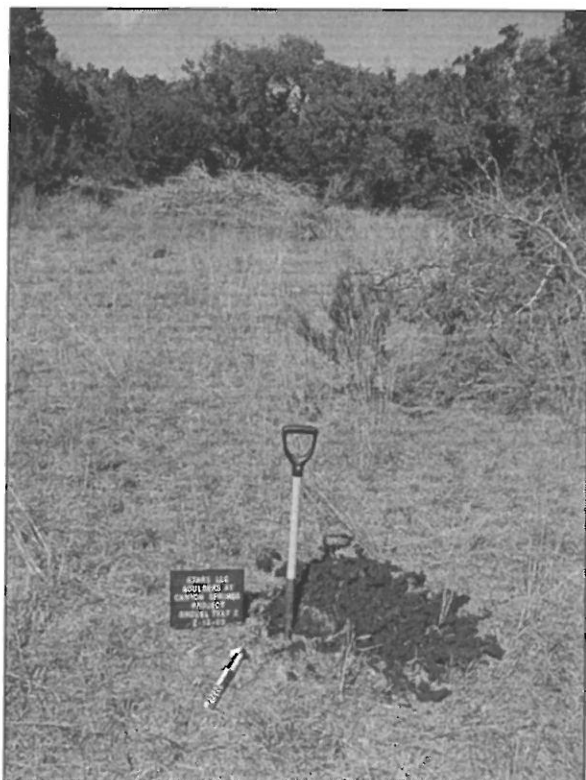


Figure 6. Shovel Test 2 and environs.



Figure 7. Shovel Test 3 and environs.



Figure 8. General landscape setting of project area lowlands with exposure of deflated and reworked limestone gravels over bedrock in existing ranch road just north of drainage channel, between Shovel Tests 2 and 3.

### Conclusions and Recommendations

The STARS investigation confirmed that subsurface soils in the upland portions of the project area apparently developed in place over limestone bedrock, are relatively shallow and riddled with limestone cobbles and gravels, and exhibit almost no visible stratigraphy. The accumulations of colluvium or alluvium along the drainage are also shallow, are severely deflated and reworked, and apparently have no potential to contain intact archeological resources that would have any appreciable research potential according to applicable criteria (cf. Figure 8). The investigation encountered no standing structures or structural ruins, nor any archeological sites or other cultural resources. However, a natural limestone sinkhole was observed in an upland setting near the northern end of the property. The STARS examination revealed that the part of the entrance visible from the surface consists of a relatively straight vertical shaft through solid limestone that extends downward about 10-12 feet to at least one horizontal passage or space. Current plans call for sealing the sinkhole with fill, and since the entrance walls are solid limestone to a depth below that to be impacted by construction, it is probable that any archeological deposits that might exist within the sinkhole, such as Native American burials (cf. Bement 1994; Veni 1998), will not be adversely affected by these plans.



Based on these results, South Texas Archeological Research Services, LLC, recommends to the project sponsors and the San Antonio Historic Preservation Office that the currently planned construction should be allowed to proceed without further archeological work, subject to the stipulation that if any cultural resources should be encountered within the project area during construction, per applicable city codes and regulations, construction work should immediately be halted in the vicinity until such finds are examined and evaluated by a qualified archeological consultant and/or the San Antonio Historic Preservation Office.



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